

AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims, in which claims 2, 9, 16, 23 and 39 are canceled without prejudice or disclaimer, and claims 1, 8, 10, 11, 15, 17, 18, 22, 24, 25, 35, 37 and 38 are currently amended.

1. (Currently Amended) A communication system comprising:

a downstream proxy server configured to communicate with a client that is configured to transmit a message requesting content specifying an object from a content server, wherein the message includes a cookie associated with the client; and

an upstream proxy server configured to include the cookie in a read-ahead request to retrieve the content from the content server and to forward the object ~~in accordance with the cookie~~ based on a predetermined criteria relating to the object, including life of the object, over a data network to the downstream proxy server prior to the client transmitting another message requesting the object.

2. (Canceled) ~~A system according to claim 1, wherein the upstream proxy server transmits the object to the downstream proxy server based on a predetermined criteria relating to the object, the predetermined criteria including size of the object or life of the object.~~

3. (Original) A system according to claim 1, wherein the downstream proxy server and the upstream proxy server communicate over a communications link that includes at least one of plurality of Transmission Control Protocol (TCP) connections to support parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

4. (Original) A system according to claim 1, wherein the data network includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

5. (Previously Presented) A system according to claim 1, further comprising:

other downstream proxy servers in communication with the upstream proxy server, the upstream proxy server multicasting the object to the downstream proxy servers over the data network.

6. (Canceled)

7. (Previously Presented) A system according to claim 1, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

8. (Currently Amended) A method of providing content to a client, the method comprising:
receiving a message, forwarded by a downstream server, from the client;
determining whether the message includes a cookie associated with the client;
including the cookie in a read-ahead request;
retrieving the content specifying an object based on the read-ahead request; and
forwarding the object over a communications link in accordance with the cookie to the downstream server based on a predetermined criteria relating to the object, wherein the predetermined criteria includes life of the object, prior to the client transmitting a message requesting the object.

9. (Canceled) ~~A method according to claim 8, further comprising:
retrieving the object; and
transmitting the object over a communications link to the downstream server based on a predetermined criteria relating to the object, wherein the predetermined criteria includes size of the object or life of the object.~~

10. (Currently Amended) A method according to claim ~~9~~ 8, wherein the communications link in the transmitting step includes at least one of plurality of Transmission Control Protocol (TCP) connections to support parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

11. (Currently Amended) A method according to claim ~~9~~ 8, wherein the communications link in the transmitting step is established over a data network that includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

12. (Original) A method according to claim 8, further comprising:

retrieving the object; and

multicasting the object to the downstream server.

13. (Canceled)

14. (Previously Presented) A method according to claim 8, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

15. (Currently Amended) A network device comprising:

means for receiving a message, forwarded by a downstream server, from the client;

means for determining whether the message includes a cookie associated with the client;

means for including the cookie in a read-ahead request;

means for retrieving content specifying an object from a content server based on the read-ahead request; and

means for forwarding the object ~~in accordance with the cookie~~ over a communications link to the downstream server based on a predetermined criteria relating to the object, including life of the object, prior to the client transmitting a message requesting the object.

16. (Canceled) ~~A network device according to claim 15, wherein the object is retrieved and transmitted over a communications link to the downstream proxy server based on a predetermined criteria relating to the object, the predetermined criteria including size of the object or life of the object.~~

17. (Currently Amended) A network device according to claim ~~16~~ 15, wherein the communications link in the includes at least one of plurality of Transmission Control Protocol (TCP) connections to support parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

18. (Currently Amended) A network device according to claim ~~46~~ 15, wherein the communications link is established over a data network that includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

19. (Original) A network device according to claim 15, wherein the object is retrieved and multicast to the downstream server.

20. (Canceled)

21. (Previously Presented) A network device according to claim 15, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

22. (Currently Amended) A computer-readable medium carrying one or more sequences of one or more instructions for providing content to a client, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

receiving a message, forwarded by a downstream server, from the client;

determining whether the message includes a cookie associated with the client;

including the cookie in a read-ahead request;

retrieving the content specifying an object based on the read-ahead request; and

forwarding the object ~~in accordance with the cookie~~ over a communications link to the downstream server based on a predetermined criteria relating to the object, wherein the predetermined criteria includes life of the object, prior to the client transmitting a message requesting the object.

23. (Canceled) ~~A computer-readable medium according to claim 22, wherein the one or more processors further perform the step of:~~

~~retrieving the object; and~~

~~transmitting the object over a communications link to the downstream server based on a predetermined criteria relating to the object, wherein the predetermined criteria includes size of the object or life of the object.~~

24. (Currently Amended) A computer-readable medium according to claim ~~23~~ 22, wherein the communications link in the transmitting step includes at least one of plurality of Transmission Control Protocol (TCP) connections to support parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

25. (Currently Amended) A computer-readable medium according to claim ~~23~~ 22, wherein the communications link in the transmitting step is established over a data network that includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

26. (Original) A computer-readable medium according to claim 22, wherein the one or more processors further perform the step of:

retrieving the object; and

multicasting the object to the downstream server.

27. (Canceled)

28. (Previously Presented) A computer-readable medium according to claim 22, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

29. (Previously Presented) A method according to claim 8, further comprising:
forwarding a list specifying expected objects corresponding to the content, wherein the downstream server blocks requests from the client for objects on the list.

30. (Previously Presented) A method according to claim 8, further comprising:

determining whether the object is cacheable, wherein the object is forwarded if the object is cacheable.

31. (Previously Presented) A method according to claim 8, wherein the downstream server explicitly tracks objects stored in a local cache, the downstream server forwarding the message only if the object associated with the requested content is not stored in the local cache.

32. (Previously Presented) A device according to claim 15, further comprising:
means for forwarding a list specifying expected objects corresponding to the content, wherein the downstream server blocks requests from the client for objects on the list.

33. (Previously Presented) A device according to claim 15, further comprising:
means for determining whether the object is cacheable, wherein the object is forwarded if the object is cacheable.

34. (Previously Presented) A device according to claim 15, wherein the downstream server explicitly tracks objects stored in a local cache, the downstream server forwarding the message only if the object associated with the requested content is not stored in the local cache.

35. (Currently Amended) A method of providing content to a client, the method comprising:
receiving a message from a client requesting content specifying an object from a content server, wherein the message includes a cookie;
transmitting the message to an upstream server configured to include the cookie in a request to retrieve the content from the content server and to determine whether the object is cacheable; and
receiving, from the upstream server, the object ~~in accordance with the cookie~~ over a data network prior to the client transmitting another message requesting the object.

36. (Previously Presented) A method according to claim 35, further comprising:

receiving a list specifying expected objects corresponding to the content; and
blocking requests from the client for objects on the list from being transmitted to the upstream
server.

37. (Currently Amended) A method according to claim 35, further comprising:
determining whether the object is cacheable, wherein the object is forwarded by the upstream
server if the object is cacheable.

38. (Currently Amended) A method according to claim 35, further comprising:
explicitly tracking objects stored in a local cache; and
forwarding the message, by the upstream server, only if the object associated with the requested
content is not stored in the local cache.

39. (Canceled) ~~A method according to claim 35, wherein the upstream server determines
whether the object is cacheable.~~